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ABSTRACT

Cigarette smoking almost always begins in the adolescent years and smoking at early ages increases the risk of becoming ill or dying from causes attributable to smoking. This report uses data from the 1992 National Health Interview Survey of Youth Risk Behavior and presents prevalence estimates for selected unhealthy behaviors among adolescents in the United States according to smoking status. These unhealthy behaviors, consistent with earlier studies, include drinking alcohol; using marijuana, cocaine, and smokeless tobacco; carrying weapons; physical fighting; sexual intercourse; failure to use a seat belt; and lack of exercise. Findings indicated that 29 percent of male youth (12 to 21 years of age) and 26 percent of female youth were current smokers, 3 percent of both sexes were former smokers, 28 percent of males and 30 percent of females had experimented with cigarettes but never smoked regularly, and 40 percent had never smoked. Each of the unhealthy behaviors is discussed in relation to smoking. In almost all cases, current smokers had the highest and "never smokers" had the lowest rate of other risk behaviors. The differences were particularly striking for use of other addictive substances such as alcohol, marijuana, and smokeless tobacco: current smokers were 3-17 times more likely than adolescents who had never smoked to have used these other substances in the previous 30 days. The data indicate that youth who engage in some high risk behaviors are likely to be engaging in others, and findings suggest that interventions targeting multiple high risk behaviors may be more effective in getting youth to adopt healthy behaviors than programs targeting single behaviors. Tables of data are included. (Contains 17 references.) (ND)

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From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

ED 390 869

## Relationship Between Cigarette Smoking and Other Unhealthy Behaviors Among our Nation's Youth: United States, 1992

by Jean C. Willard and Charlotte A. Schoenborn, M.P.H., Division of Health Interview Statistics

### Introduction

The transitional period between childhood and adulthood is a time in which youth experience many physical changes, as well as a developing sense of self and increasing emotional independence (1). During this time, adolescents often develop behaviors that extend into adulthood (2). Young people may experiment with risky health behaviors, some of which have long term health consequences (3). Some adolescents use these behaviors to bond with peers, improve their social image, and appear independent and mature (1). Recently, health risk behaviors of adolescents have been the focus of considerable study (4–13).

Cigarette smoking almost always begins in the adolescent years (5,14) and smoking at early ages increases the risk of becoming ill or dying from causes attributable to smoking (1). Reduction in smoking prevalence among adolescents is one of the objectives established in the National Health Objectives for the Year 2000 (2). These objectives encompass 22 priority areas, including tobacco, alcohol and other drugs, physical activity and fitness, nutrition, violent and abusive behavior, and family planning. Each priority area contains numerous specific, measurable health objectives. Many of the objectives specifically target health-threatening behaviors among adolescents and young adults.

Progress toward achieving the National Health Objectives for the Year 2000 is monitored closely at the Federal level. Much research was devoted to establishing baseline prevalence estimates of high risk behaviors and developing objectives based on both the baseline estimates and a realistic appraisal of what can be accomplished by the end of the decade. While the objectives set targets for individual behaviors, a large body of research suggests that many high risk behaviors are interrelated. The recent Surgeon General's Report, *Preventing Tobacco Use Among Young People* (1), summarized studies that have shown relationships between smoking and other health-threatening behaviors such as drinking alcohol, using illicit drugs, using smokeless tobacco products, carrying weapons, engaging in physical fights, ever having had sexual intercourse, and failure to wear seat belts. Research has also shown that adolescents who participated in interscholastic sports were less likely than youth who did not participate to be regular or heavy smokers (6). Much of this earlier research was based on samples of youth who were in school, with data collected in a classroom setting. This report expands upon earlier research by delineating the relationship between cigarette smoking and other high risk behaviors among adolescents in the general household population of the United States, including youth who have left school either prematurely or by graduating. Examining the relationships between smoking and other high risk behaviors may provide clues on how to reduce smoking and other unhealthy behaviors among adolescents, thereby furthering progress toward achieving the National Health Objectives for the Year 2000.

This report uses data from the 1992 National Health Interview Survey of Youth Risk Behavior (NHIS-YRBS) and presents prevalence estimates for selected unhealthy behaviors among adolescents in the United States according to smoking status. These unhealthy behaviors, consistent with earlier studies, include drinking alcohol; consuming more than five alcoholic beverages in a row; using marijuana, cocaine, and smokeless tobacco;

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carrying weapons; physical fighting; sexual intercourse; failure to use a seat belt; lack of exercise; and consumption of fewer than five servings of fruits and vegetables daily. These behaviors are of significant public health concern as evidenced by their inclusion in the National Health Objectives for the Year 2000.

The data presented in this report provide an overview of unhealthy behaviors that are recognized as important for the current future health of our Nation's youth. However, these data do not provide specific tracking information for the objectives because of the age specificity of most objectives.

## Data and methods

The NHIS-YRBS was developed to provide estimates of health risk behaviors for the noninstitutionalized, household population of youth aged 12–21 years. The NHIS is a continuous, nationwide, household interview survey of the civilian noninstitutionalized population of the United States, conducted by the National Center for Health Statistics (NCHS)(15). Interviews are conducted for NCHS by the interviewing staff of the U.S. Bureau of the Census. Information is obtained about the health and sociodemographic characteristics of each member of the household. Each year, special topic surveys are included in conjunction with the basic NHIS. These topics change annually. In 1992, the NHIS-YRBS was one of the special topics.

Within each NHIS sample family, one youth who was attending school and up to two youth who were not in school or whose in-school status was unknown were selected for the NHIS-YRBS interview. Youth in all NHIS sample families, including emancipated youth (married youth and/or those not living with a parent or guardian), were eligible for selection. The youth were followed back approximately two months after the initial household interview. NHIS-YRBS interviews were conducted in person from April 1992 through March 1993. NHIS-YRBS interviews were completed for 10,645 youth, representing an overall response rate of 73.9 percent.

Rather than using the traditional face-to-face interview or self-administered questionnaires, the NHIS-YRBS used a unique audiocassette technology, developed in collaboration with researchers at University of Michigan's Survey Research Center. This technology allowed the youth to listen to the questions, using a personal headset and to record answers on an answer sheet that contained only answer categories. The answer sheet did not contain any information that would allow parents or others in the household to know what questions the youth was answering. The voice on the interview tape matched the sex of the respondent; males heard a male voice and females heard a female voice. This data collection method ensured greater privacy and increased data quality for youth with poor reading skills.

Using data from the 1992 NHIS-YRBS, this report presents prevalence estimates for selected unhealthy behaviors among male and female adolescents 12–21 years old and examines the relationship between cigarette smoking and each of the other behaviors, using age-adjusted statistics. Table 1 contains percents and standard errors for each of the selected unhealthy behaviors by smoking status. These unadjusted statistics (table 1) are used for discussions of overall prevalence. Table 2 contains percents, age-adjusted to the full NHIS-YRBS sample, and the associated standard errors. For data on sexual intercourse, age adjustment was limited to the NHIS-YRBS sample aged 14–21 years because only youth 14 years and older were asked the questions related to sexual experiences. Age-adjusted statistics are used in all discussions of findings concerning relationships between smoking and other unhealthy behaviors. Age-adjusted statistics control for variations in the age distributions of the various smoking status groups. Statistics for all youth ages 12–21 years are shown in order to provide an overall view of the relationships between smoking and a variety of other behaviors during the adolescent and young adult years. Age-specific analyses (not shown) revealed that the relationships between smoking and other unhealthy behaviors were stronger at the younger ages, but remained consistent, if somewhat attenuated, among youth 18–21 years of age.

## Definition of smoking terms

Definitions for smoking status in the national health objectives are aimed at adults. For adults, current smoker is a person who has ever smoked 100 cigarettes in his or her lifetime and smokes "now"— "now" being defined by the respondent. Recent measures of smoking status assess regularity of smoking in adults by distinguishing between "everyday" and "some day" smokers. These definitions may not be appropriate for adolescents.

Consistent with other studies of adolescents, current smokers are defined as youth who have smoked at least one cigarette in the past 30 days. Former smokers are youth who had smoked at least one cigarette every day for 30 days at some time in their lives, but had not smoked cigarettes in the past month. Experimenters are youth who had smoked at least one or two puffs of a cigarette, but had never smoked cigarettes every day for 30 days and had not used cigarettes in the past 30 days. "Never smokers" are youth who had never had even one or two puffs of a cigarette. Definitions for other terms used in this report are in the technical notes.

## Findings

Figure 1 shows prevalence of smoking among youth aged 12–21 years. About 29 percent of male youth and 26 percent of female youth were current smokers in 1992 and about 3 percent of both sexes were former smokers. About 28 percent of male youth and about 30 percent of female youth had experimented with cigarettes, but had never smoked regularly. About 40 percent of youth had never taken a puff of a cigarette.

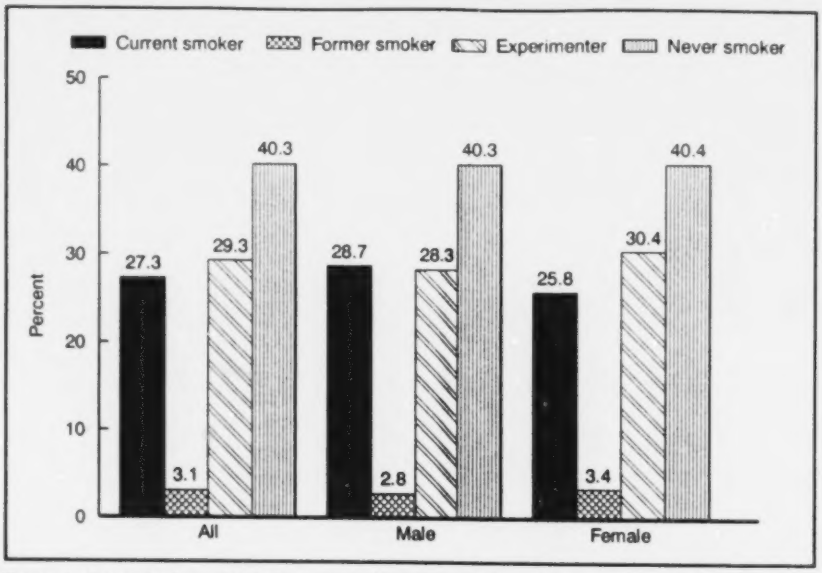


**Figure 1. Percent of youth 12–21 years of age by smoking status and sex: United States, 1992**

Table 1 shows the prevalence of selected unhealthy behaviors among male and female adolescents by smoking status. Figures 2 and 3 display overall prevalence of these behaviors for males and females, respectively. The data in figures 2 and 3 correspond to column 1 of table 1. Together these data show the overall pattern of unhealthy behaviors among U.S. adolescents. In general, the patterns appear similar for adolescent males and females. For example, among both male and female youth, failure to eat at least five servings of fruits and vegetables daily had the highest prevalence of the unhealthy behaviors examined (86.1 percent and 87.9 percent, respectively), followed by failure to always use seat belts (70.2 percent and 61.4 percent of males and females, respectively), and engaging in sexual intercourse (62.7 percent and 58.7 percent of males and females, respectively). Prevalence of cocaine use was only about 1 percent for both groups.

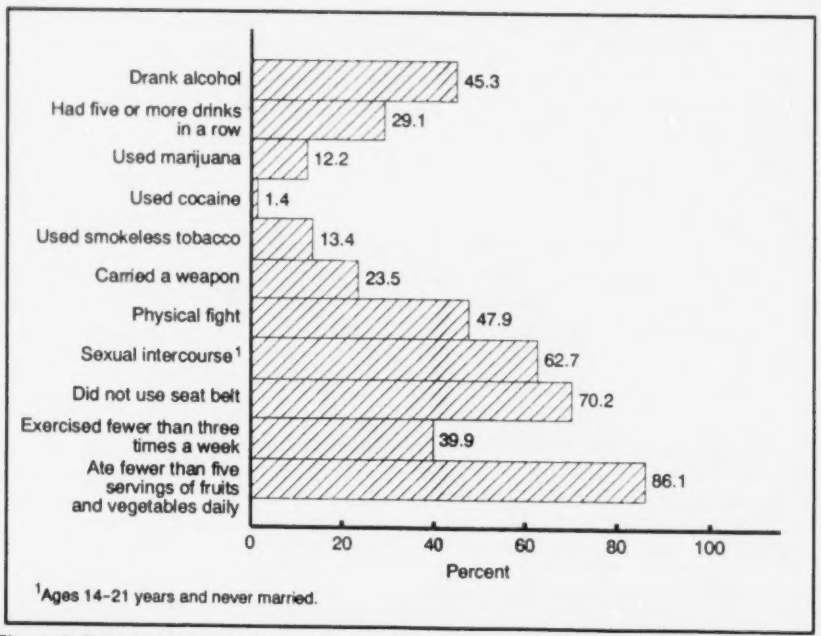


**Figure 2. Prevalence of selected unhealthy behaviors among adolescent males: United States, 1992**

Although the patterns among the behaviors appear similar for males and females, prevalence estimates for some behaviors differed markedly between the sexes. Among the more noteworthy differences are: male youth were more likely than female youth to have engaged in a physical fight in the past year (47.9 percent versus 29.2 percent); to have carried a weapon in the past month (23.5 percent versus 5.6 percent); to have used smokeless tobacco (13.4 percent versus 1.5 percent); and to have used marijuana (12.2 percent versus 9.2 percent). Female youth (52.7 percent) were more likely than male youth (39.9 percent) to get inadequate exercise (defined as exercising less than three times per week). Prevalence of consumption of any alcohol was about the same for male (45.3 percent) and female youth (44.0 percent), although males (29.1 percent) were somewhat more likely than females (22.0 percent) to have had five or more drinks in a row.

Figures 1–3 and table 1 show prevalence estimates of unhealthy behaviors among U.S. adolescents. Using these estimates and the population table in the technical notes of this report, the reader can estimate the numbers of youth who are both smoking and engaging in other high risk behaviors. Analysis of interrelationships between smoking and other unhealthy behaviors should be restricted to the data in table 2.

Table 2 presents data on the relationship between smoking and selected other unhealthy behaviors among adolescents, adjusted for differences in the age composition of the various smoking status groups. Generally, youth who had never smoked were significantly less likely to have engaged in each unhealthy behavior studied than were current smokers. With a few exceptions, "never smokers" were also less likely than former smokers or experimenters to participate in unhealthy behaviors.

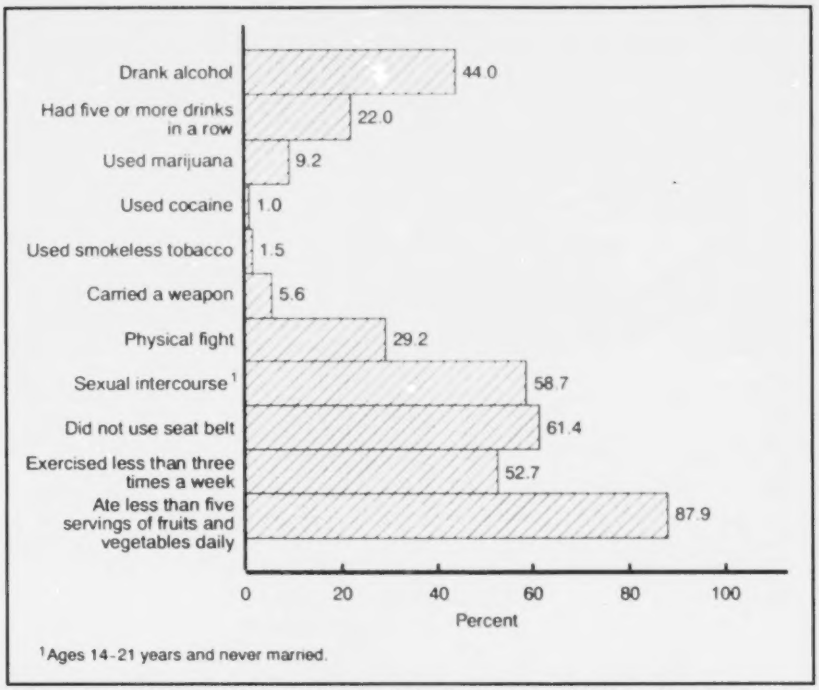


**Figure 3. Prevalence of selected unhealthy behaviors among adolescent females: United Staes, 1992**

## Drinking

Alcohol consumption among youth has serious short term and long term health consequences. Prevention efforts are directed at encouraging young people to abstain from alcohol and to avoid episodic heavy drinking (sometimes called binge drinking) if they do drink. Table 2 shows that after controlling for differences in age composition, about three-quarters (74.4 percent) of current smokers aged 12–21 years old had consumed alcohol in the past 30 days, compared with 23.0 percent of "never smokers." Figure 4 shows the percent of youth who drank alcohol in the past month by smoking status and sex. Among current smokers, prevalence of alcohol consumption in the past month was about the same for males and females. Among those who have never smoked, males were slightly more likely than females to have consumed alcohol in the past month. Table 2 also shows that current smokers (50.3 percent) were considerably more likely than former smokers (25.5 percent), experimenters (21.3 percent), and "never smokers" (9.5 percent) to have had five or more drinks in a row in the past month. Rates of episodic heavy drinking were somewhat lower for females than for males across all categories of smoking status, but the pattern remained the same.

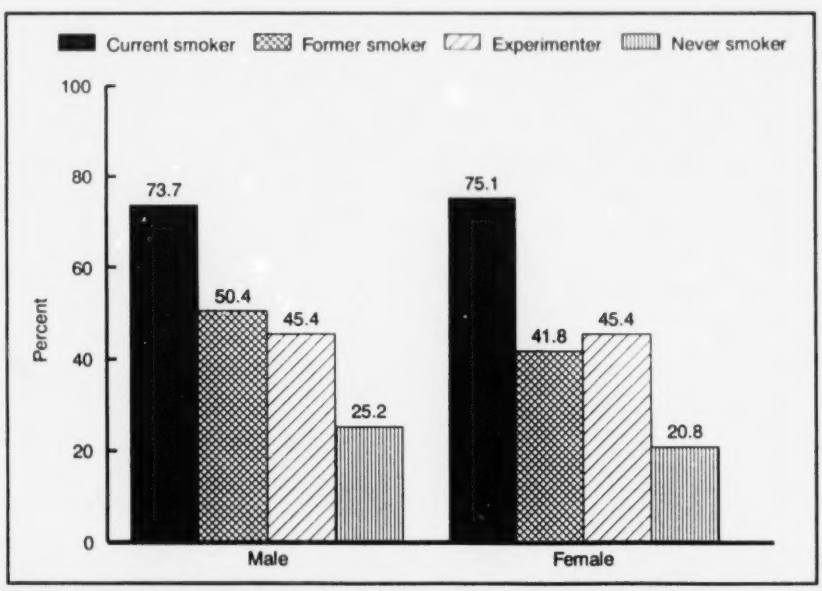


**Figure 4. Percent of youth who drank alcohol in the past month, by smoking status and sex: United States, 1992**

## Marijuana and cocaine use

As with alcohol, drug use among our Nation's young people is a major problem and the focus of extensive prevention efforts. Table 2 shows past month use of each of two drugs—marijuana and cocaine—by smoking status. Among youth 12–21 years of age, controlling for differences in age composition, 26.5 percent of adolescent current smokers reported marijuana use in the previous 30 days compared with 10.3 percent of former smokers, 6.2 percent of experimenters, and only 1.5 percent of youth who had never smoked. Among both males and females, current marijuana use was considerably more prevalent among current smokers than among youth who were not currently smoking. Table 2 also shows that 3.5 percent of current smokers 12–21 years old had used cocaine in the previous month. Although data for former smokers, experimenters, and "never smokers" do not meet reliability standards, patterns indicate that prevalence may be lower in these groups.

## Smokeless tobacco

Smokeless tobacco use among our Nation's youth is a serious public health concern. Like so many other behaviors, use of smokeless tobacco (chewing

tobacco and snuff) is frequently taken up during the adolescent years. Table 2 shows that after controlling for differences in age composition, male adolescents who were current smokers (28.1 percent) and former smokers (27.5 percent) were almost seven times more likely to have used smokeless tobacco in the past month than were male youth who had never smoked (4.1 percent). Although the small number of female adolescents reporting use of smokeless tobacco makes estimates of this behavior unreliable for most subgroups, the data suggest that currently smoking females may be more likely to be users of smokeless tobacco than other adolescent females.

## Carrying weapons and physical fights

Table 2 also provides important insights into the extent to which youth engage in two types of violent behavior—carrying weapons and engaging in physical fights—according to smoking status. After controlling for differences in age composition, about one-quarter of youth who were current smokers reported carrying a weapon such as a gun, knife, or club during the previous 30 days, compared with about one-tenth of youth who had never smoked. Figure 5 shows that adolescent male smokers were more than twice as likely (39.4 percent) as males who had never smoked (16.5 percent) to have carried a weapon. Rates of carrying weapons among male former smokers (30.8 percent) and experimenters (22.1 percent) ranked between the other two groups. Adolescent female current smokers were more than four times as likely (11.0 percent) as female youth who had never smoked (2.6 percent) to have carried a weapon during the previous month. As with males, female experimenters (5.8 percent) ranked between those of current and "never smokers" on the rate of those who carried weapons. Due to the small number of female former smokers who carried weapons, data for this group were unreliable.

Table 2 shows that male current smokers (64.1 percent) were more likely than males who had experimented with cigarettes (47.1 percent) and those who had never smoked (38.4 percent) to have been involved in a physical fight in the past year. Among female adolescents, current smokers (44.3 percent) were more than twice as likely as "never smokers" (19.8 percent) to have engaged in physical fighting in the past year.

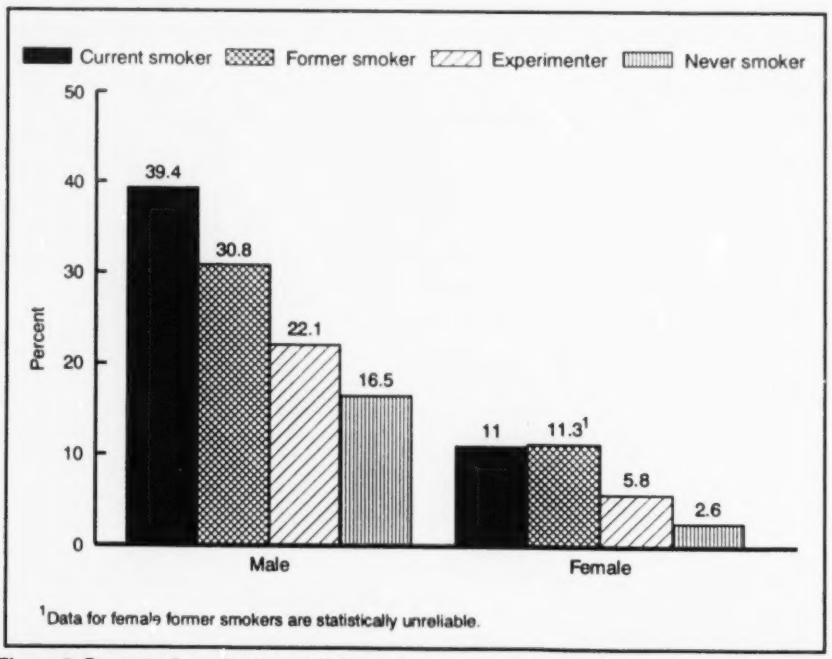


**Figure 5. Percent of youth who carried weapons in the past month, by smoking status and sex: United States, 1992**

## Sexual intercourse

The NHIS-YRBS includes data on sexual intercourse for adolescents 14–21 years of age. For this report, analysis was restricted to youth who had never been married.

Prevalence of sexual intercourse among never married adolescents was high across all smoking status groups. Table 1 indicates that 6 of 10 never married adolescents 14 years old and older (60.8 percent) had engaged in sexual intercourse at some time in their lives. There appears to be a relationship between cigarette smoking and sexual intercourse. Current smokers (80.0 percent) and former smokers (80.4 percent) were most likely to have engaged in sexual intercourse compared with 60.6 percent of youth who had only experimented with cigarettes and 41.4 percent of youth who had never smoked at all (table 2).

## Seat belts

Injuries are one of the leading causes of death among adolescents and young adults. Injury deaths among those 15–24 years of age are largely attributable to motor vehicle accidents (2). Overall, 65.8 percent of adolescents did not always use seat belts when they rode in a car (table 1). Table 2 shows that over three-quarters (76.6 percent) of current smokers did not always wear a seat belt compared with about one-half (55.7 percent) of adolescents who had never smoked, with the other two groups falling in between.

## Vigorous exercise

Regular participation in vigorous exercise is recognized as having important health benefits for people of all ages, including youth. In the NHIS-YRBS, youth were asked how often in the past week they engaged in any activities that made them sweat or breathe hard. The percent of youth who reported participating in such vigorous activities 3 or more days in the week preceding the interview is shown in table 2, according to smoking status.

Overall, prevalence of regular, vigorous exercise among adolescents was low (46.2 percent), regardless of smoking status (table 1). Table 2 shows that 49.6 percent of adolescent current smokers exercised less than 3 times during the week preceding the survey; 44.8 percent of "never smokers" exercised this infrequently.

### Eating habits

Guidelines for healthy eating generally recommend eating five or more servings of fruits and vegetables daily. The National Health Objectives for the Year 2000 address this issue for adults, but not for children or youth. Nevertheless, the NHIS-YRBS asked youth about fruit and vegetable consumption during the day preceding the interview. Overall, 87.0 percent of all adolescents consumed less than five servings of fruits and vegetables (table 1). Table 2 shows that consumption of fewer than the recommended minimum quantities of fruits and vegetables was somewhat more common among adolescents who currently smoked (89.6 percent) than among those who had never smoked (83.6 percent).

## Discussion and conclusions

This report provides a broad overview of the links between smoking and other high risk behaviors. Although it does not establish causal links, it does show a consistent association between smoking and other unhealthy behaviors among adolescents, further strengthening the evidence that unhealthy behaviors among adolescents are interrelated. In almost all cases, current smokers had the highest and "never smokers" the lowest rates of other risk behaviors. The differences were particularly striking for use of other addictive substances such as alcohol, marijuana, and smokeless tobacco: current smokers were 3–17 times more likely than adolescents who had never smoked to have used these other substances in the past 30 days. (Data for cocaine were suggestive of a similar relationship, but were not statistically reliable due to small numbers of youth reporting cocaine use.) Although not quite as dramatic, differences between smoking and nonsmoking teenagers were also noteworthy for carrying weapons, physical fighting, sexual intercourse, and failure to use seat belts. For two risk behaviors—exercising less than three times per week and eating fewer than five servings of fruits and vegetables—smokers similarly had higher prevalence rates than those who had never smoked, but the differences were less striking.

The interrelationships between smoking and other unhealthy behaviors are undoubtedly complex. Multivariate analyses are needed to delineate the nature of these interrelationships. The data presented here suggest that high risk behaviors may cluster. That is, youth who engage in some high risk behaviors are likely to be engaging in others. Interventions that target multiple high risk behaviors may be more effective in getting youth to adopt healthy behaviors than programs that target a single behavior.

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**Table 1. Percent of youth ages 12–21 years who engaged in selected unhealthy behaviors by type of behavior, sex, and smoking status: United States, 1992**

| Unhealthy behavior[1] and sex | All smoking statuses | | Current smoker | | Former smoker | | Experimenter | | Never smoker | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Percent | Standard error | Percent | Standard error | Percent | Standard error | Percent | Standard error | Percent | Standard error |
| **Drank alcohol** | | | | | | | | | | |
| Both sexes | 44.6 | 0.69 | 77.9 | 0.93 | 55.5 | 3.40 | 48.7 | 1.12 | 17.6 | 0.79 |
| Male | 45.3 | 0.86 | 78.2 | 1.31 | 56.4 | 5.69 | 48.0 | 1.64 | 18.8 | 1.00 |
| Female | 44.0 | 0.94 | 77.7 | 1.29 | 54.9 | 4.01 | 49.4 | 1.57 | 16.5 | 1.07 |
| **Had five or more drinks in a row** | | | | | | | | | | |
| Both sexes | 25.6 | 0.58 | 54.5 | 1.07 | 28.8 | 2.80 | 23.4 | 1.00 | 6.8 | 0.51 |
| Male | 29.1 | 0.78 | 59.5 | 1.42 | 34.6 | 4.92 | 26.7 | 1.49 | 8.2 | 0.76 |
| Female | 22.0 | 0.75 | 48.9 | 1.57 | 24.0 | 3.10 | 20.2 | 1.23 | 5.4 | 0.61 |
| **Used marijuana** | | | | | | | | | | |
| Both sexes | 10.7 | 0.39 | 29.1 | 1.04 | 11.7 | 2.13 | 6.8 | 0.56 | 1.1 | 0.18 |
| Male | 12.2 | 0.59 | 31.1 | 1.49 | 16.4 | 3.97 | 7.8 | 0.84 | 1.6 | 0.30 |
| Female | 9.2 | 0.46 | 26.8 | 1.35 | 7.8 | 1.99 | 5.8 | 0.70 | 0.6 | 0.18 |
| **Used cocaine** | | | | | | | | | | |
| Both sexes | 1.2 | 0.11 | 3.9 | 0.37 | *1.5 | 0.75 | *0.3 | 0.09 | *0.1 | 0.06 |
| Male | 1.4 | 0.18 | 4.2 | 0.57 | *1.6 | 1.15 | *0.4 | 0.15 | *0.2 | 0.08 |
| Female | 1.0 | 0.15 | 3.5 | 0.55 | *1.5 | 1.00 | *0.2 | 0.11 | *0.1 | 0.07 |
| **Used smokeless tobacco** | | | | | | | | | | |
| Both sexes | 7.5 | 0.37 | 16.1 | 0.90 | 14.2 | 3.07 | 6.2 | 0.51 | 2.1 | 0.25 |
| Male | 13.4 | 0.65 | 27.9 | 1.53 | 29.4 | 5.72 | 11.2 | 0.95 | 3.6 | 0.44 |
| Female | 1.5 | 0.20 | 2.9 | 0.52 | *1.4 | 0.84 | 1.4 | 0.36 | *0.6 | 0.19 |
| **Carried a weapon** | | | | | | | | | | |
| Both sexes | 14.5 | 0.42 | 23.2 | 0.91 | 18.9 | 3.13 | 13.3 | 0.76 | 9.2 | 0.54 |
| Male | 23.5 | 0.72 | 35.0 | 1.43 | 29.9 | 5.88 | 21.5 | 1.35 | 16.2 | 0.92 |
| Female | 5.6 | 0.39 | 10.1 | 0.93 | 9.9 | 2.79 | 5.7 | 0.66 | 2.4 | 0.39 |
| **Engaged in physical fight in past year** | | | | | | | | | | |
| Both sexes | 38.6 | 0.62 | 48.7 | 1.09 | 42.3 | 2.99 | 36.2 | 1.06 | 33.2 | 0.89 |
| Male | 47.9 | 0.86 | 57.7 | 1.52 | 49.5 | 5.21 | 44.9 | 1.51 | 42.9 | 1.23 |
| Female | 29.2 | 0.78 | 38.7 | 1.54 | 36.4 | 3.98 | 28.1 | 1.37 | 23.4 | 1.11 |
| **Ever had sexual intercourse[2]** | | | | | | | | | | |
| Both sexes | 60.8 | 0.77 | 81.7 | 0.98 | 82.4 | 2.70 | 61.8 | 1.28 | 37.9 | 1.29 |
| Male | 62.7 | 1.02 | 81.8 | 1.34 | *80.8 | 4.12 | 61.8 | 1.86 | 42.5 | 1.65 |
| Female | 58.7 | 1.07 | 81.6 | 1.41 | *84.1 | 3.20 | 61.9 | 1.76 | 33.2 | 1.77 |
| **Did not always use seat belt** | | | | | | | | | | |
| Both sexes | 65.8 | 0.69 | 75.5 | 1.05 | 67.2 | 3.13 | 66.9 | 1.13 | 58.4 | 1.00 |
| Male | 70.2 | 0.88 | 79.7 | 1.27 | 77.7 | 4.21 | 70.4 | 1.47 | 62.9 | 1.33 |
| Female | 61.4 | 0.94 | 70.8 | 1.63 | 58.4 | 4.13 | 63.7 | 1.60 | 53.8 | 1.36 |
| **Exercised vigorously fewer than 3 times in past week[3]** | | | | | | | | | | |
| Both sexes | 46.2 | 0.59 | 54.4 | 1.06 | 55.3 | 3.17 | 46.1 | 1.03 | 40.1 | 0.94 |
| Male | 39.9 | 0.80 | 50.2 | 1.49 | 55.0 | 5.17 | 37.2 | 1.46 | 33.3 | 1.19 |
| Female | 52.7 | 0.85 | 59.2 | 1.49 | 55.5 | 4.01 | 54.4 | 1.40 | 46.9 | 1.39 |
| **Ate fewer than five servings of fruits and vegetables yesterday** | | | | | | | | | | |
| Both sexes | 87.0 | 0.42 | 89.8 | 0.71 | 91.3 | 1.66 | 89.2 | 0.64 | 83.1 | 0.73 |
| Male | 86.1 | 0.58 | 89.4 | 0.95 | 93.3 | 2.42 | 87.6 | 1.03 | 82.2 | 1.01 |
| Female | 87.9 | 0.57 | 90.3 | 0.93 | 89.7 | 2.25 | 90.8 | 0.77 | 84.0 | 0.95 |

[1]Reference period is past 30 days unless otherwise specified.
[2]Ages 14–21 years and never married.
[3]Vigorous is defined as exercise that made the youth sweat and breathe hard.



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**Table 2. Age-adjusted percent of youth ages 12–21 years who engaged in selected unhealthy behaviors by type of behavior, sex, and smoking status: United States, 1992**

| Unhealthy behavior[1] and sex | All smoking statuses | | Current smoker | | Former smoker | | Experimenter | | Never smoker | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Percent | Standard error | Percent | Standard error | Percent | Standard error | Percent | Standard error | Percent | Standard error |
| Drank alcohol | | | | | | | | | | |
| Both sexes | 44.3 | 0.61 | 74.4 | 1.11 | 47.0 | 3.92 | 45.4 | 1.01 | 23.0 | 1.02 |
| Male | 45.3 | 0.80 | 73.7 | 1.60 | 50.4 | 6.23 | 45.4 | 1.49 | 25.2 | 1.34 |
| Female | 43.4 | 0.85 | 75.1 | 1.56 | 41.6 | 3.25 | 45.4 | 1.42 | 20.8 | 1.29 |
| Had five or more drinks in a row | | | | | | | | | | |
| Both sexes | 25.4 | 0.53 | 50.3 | 1.22 | 25.5 | 2.93 | 21.3 | 0.88 | 9.5 | 0.69 |
| Male | 29.2 | 0.72 | 53.7 | 1.61 | 31.5 | 4.57 | 24.7 | 1.27 | 12.0 | 1.07 |
| Female | 21.7 | 0.71 | 46.4 | 1.80 | 18.8 | 2.69 | 18.2 | 1.11 | 7.2 | 0.81 |
| Used marijuana | | | | | | | | | | |
| Both sexes | 10.7 | 0.38 | 26.5 | 1.02 | 10.3 | 2.19 | 6.2 | 0.52 | 1.5 | 0.25 |
| Male | 12.3 | 0.58 | 28.0 | 1.48 | 15.2 | 3.98 | 7.4 | 0.79 | 2.3 | 0.43 |
| Female | 9.1 | 0.45 | 24.7 | 1.34 | 5.4 | 1.30 | 5.2 | 0.62 | *0.8 | 0.25 |
| Used cocaine | | | | | | | | | | |
| Both sexes | 1.2 | 0.11 | 3.5 | 0.46 | *1.1 | 0.55 | *0.3 | 0.09 | *0.2 | 0.10 |
| Male | 1.5 | 0.18 | 3.5 | 0.47 | *1.4 | 0.99 | *0.4 | 0.14 | *0.3 | 0.13 |
| Female | 1.0 | 0.15 | 3.6 | 0.79 | *1.0 | 0.62 | *0.2 | 0.10 | *0.2 | 0.12 |
| Used smokeless tobacco | | | | | | | | | | |
| Both sexes | 7.5 | 0.37 | 16.1 | 1.02 | 13.7 | 3.50 | 6.1 | 0.49 | 2.4 | 0.28 |
| Male | 13.5 | 0.65 | 28.1 | 1.76 | 27.5 | 6.48 | 11.1 | 0.92 | 4.1 | 0.52 |
| Female | 1.5 | 0.21 | 3.0 | 0.60 | *1.5 | 0.92 | 1.5 | 0.36 | *0.6 | 0.20 |
| Carried a weapon | | | | | | | | | | |
| Both sexes | 14.5 | 0.41 | 25.6 | 1.12 | 20.2 | 3.42 | 13.8 | 0.78 | 9.5 | 0.59 |
| Male | 23.4 | 0.71 | 39.4 | 1.74 | 30.8 | 6.40 | 22.1 | 1.37 | 16.5 | 1.02 |
| Female | 5.6 | 0.38 | 11.0 | 1.10 | *11.3 | 4.29 | 5.8 | 0.70 | 2.6 | 0.43 |
| Engaged in physical fight in past year | | | | | | | | | | |
| Both sexes | 38.6 | 0.59 | 54.7 | 1.09 | 46.6 | 3.50 | 38.3 | 1.05 | 29.0 | 0.86 |
| Male | 47.7 | 0.81 | 64.1 | 1.40 | 53.9 | 5.42 | 47.1 | 1.39 | 38.4 | 1.32 |
| Female | 29.3 | 0.77 | 44.3 | 1.70 | 41.8 | 5.20 | 29.6 | 1.45 | 19.8 | 0.95 |
| Ever had sexual intercourse[2] | | | | | | | | | | |
| Both sexes | 60.8 | 0.72 | 80.0 | 0.99 | 80.4 | 3.27 | 60.6 | 1.13 | 41.4 | 1.40 |
| Male | 62.4 | 0.96 | 79.9 | 1.38 | 77.7 | 5.58 | 60.0 | 1.61 | 45.9 | 1.85 |
| Female | 59.1 | 1.05 | 80.0 | 1.42 | 82.9 | 3.43 | 61.0 | 1.64 | 36.6 | 1.89 |
| Did not always use seat belt | | | | | | | | | | |
| Both sexes | 65.8 | 0.68 | 76.6 | 1.03 | 71.6 | 3.05 | 67.7 | 1.11 | 55.7 | 1.11 |
| Male | 70.2 | 0.87 | 80.6 | 1.38 | 79.0 | 4.34 | 70.9 | 1.44 | 60.3 | 1.56 |
| Female | 61.4 | 0.93 | 72.2 | 1.61 | 66.3 | 3.61 | 64.9 | 1.56 | 51.2 | 1.47 |
| Exercised vigorously fewer than 3 times in past week[3] | | | | | | | | | | |
| Both sexes | 46.2 | 0.58 | 49.6 | 1.17 | 48.9 | 3.78 | 44.1 | 1.00 | 44.8 | 1.00 |
| Male | 40.1 | 0.79 | 45.6 | 1.62 | 51.5 | 6.27 | 36.1 | 1.42 | 37.7 | 1.39 |
| Female | 52.4 | 0.83 | 54.0 | 1.64 | 45.6 | 4.44 | 51.6 | 1.40 | 51.7 | 1.43 |
| Ate fewer than five servings of fruits and vegetables yesterday | | | | | | | | | | |
| Both sexes | 87.0 | 0.42 | 89.6 | 0.80 | 91.2 | 1.94 | 89.0 | 0.65 | 83.6 | 0.74 |
| Male | 86.1 | 0.58 | 88.4 | 1.18 | 92.8 | 2.61 | 87.5 | 1.04 | 82.7 | 1.05 |
| Female | 87.9 | 0.57 | 90.7 | 1.00 | 90.1 | 2.91 | 90.5 | 0.82 | 84.5 | 1.01 |

[1]Reference period is past 30 days unless otherwise specified.
[2]Ages 14–21 years and never married.
[3]Vigorous is defined as exercise that made the youth sweat and breathe hard.

NOTE: Total age-adjusted percents may differ slightly from total percents shown in table 1 due to minor variations in item nonresponse among youth in the various smoking status groups.

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## Technical notes

### Target population

The estimates presented in this report are based on data from the 1992 National Health Interview Survey of Youth Risk Behavior (NHIS-YRBS). The National Health Interview Survey (NHIS) is a continuous, nationwide, household interview survey of the civilian noninstitutionalized population of the United States, conducted by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC).

The NHIS-YRBS was a followback survey of a subsample of youth ages 12–21 years who were identified at the time of the 1992 NHIS household interviews. Within each NHIS sample family, one youth attending school and up to two youth not in school or whose in-school status was unknown were randomly selected for the NHIS-YRBS interview. Youth in all NHIS sample families, including emancipated youth (married youth and/or those not living with a parent or guardian), were eligible for selection. The youth were interviewed approximately 2 months after the initial NHIS interview. NHIS-YRBS interviews were conducted in person from April 1992 through March 1993. The ages shown in this report represent the youths' ages at the time of the initial NHIS interview, which may not be the same as their ages at the time of the NHIS-YRBS interview because of the 2-month lag between the two data collection points. The questions on sexual intercourse were asked of all youth who were 14 years old or older by the time of the NHIS-YRBS interview. However, for consistency with other data presented in this report, the data on sexual intercourse shown in tables 1 and 2 are limited to youth who were 14 years old at the time of the initial NHIS household interview.

### Description of the survey

The NHIS-YRBS provides estimates of health risk behaviors for the noninstitutionalized household population of youth ages 12–21 years. Topics covered in the YRBS include: tobacco use including cigarettes, chewing tobacco, and snuff; alcohol consumption; illegal drug use and perceptions of risks associated with their use; nutrition, including weight control; physical activity; injury control, including helmet use when riding bicycles and motorcycles; violence, including frequency of physical fighting and carrying weapons; overnight stays away from home and without permission; sexual history and practices; and AIDS education at home and in school. This survey is part of the Youth Risk Behavior Surveillance System (YRBSS). The YRBSS was developed by the Division of Adolescent and School Health of the National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC), to monitor the major health risk behaviors of American youth. The surveillance system is described elsewhere (16). The majority of the YRBSS is school-based and has been tracking behaviors of in-school youth since 1990. The 1992 NHIS-YRBS added a new dimension to the study of health risk behaviors among American youth by providing estimates of risk behaviors for out-of-school youth (17). Out-of-school youth were oversampled in the NHIS-YRBS to achieve reliable estimates for this hard-to-reach group; a special question was added to the basic NHIS questionnaire in 1992 to determine school status for the YRBS sample.

### Data collection methods

Interviews are conducted for NCHS by staff of the U.S. Bureau of the Census. The basic health and demographic questionnaire of the NHIS is administered in a personal interview, with telephone follow-up permitted for hard-to-reach people. Basic health information is collected for every member of the family residing in the household. Based on the roster of family members listed at the time of interview, a subsample of youth was selected for the NHIS-YRBS.

Because the sampling frame was the 1992 NHIS and three-quarters of the data were collected in 1992, for ease of reading, findings from the NHIS-YRBS are referred to as 1992 results although the data were collected from April 1992 through March 1993.

In collaboration with researchers at University of Michigan's Survey Research Center, extensive methodological testing was conducted during the development of the NHIS-YRBS to determine the optimal mode of data collection from adolescents. Results indicated that, due to the sensitive nature of the questions on the NHIS-YRBS, privacy and confidentiality would be of paramount concern to teens during the interview. Youth indicated that they would be more likely to answer questions honestly if the questions could not be heard by others in the household. Further, younger teens and those with less developed reading skills found a written questionnaire to be difficult to complete. For these reasons, questions were asked of teens using a portable audio headset. They recorded their answers on an answer sheet that included only answer categories, not questions. In addition to providing privacy and being easier for less advanced readers, this mode of data collection had the added benefit of providing standardization in asking questions that eliminated the normal variations that occur when an interviewer asks the questions.

### Response rates

Of the 13,789 persons 12–21 years of age identified as eligible in the basic NHIS interview, NHIS-YRBS interviews were completed for 10,645 youths, representing a response rate of 77.2 percent of eligible respondents and an overall response rate of 73.9 percent (the product of the YRBS response rate (77.2 percent) and the response rate for the basic NHIS household interview (95.7 percent)).

School status was ascertained in two ways. At the time of the initial NHIS questionnaire, 8,062 youth were currently in school or on vacation from school, 1,886 youth were not in school, and the school status of the remaining 697 adolescents was unknown. At the time of the NHIS-YRBS interview, 8,203 were currently in school or on vacation from school, 2,384 were not in

school, and the school status of the remaining 58 youth was not ascertained. Due to some field difficulties in rostering eligible youth, the number of teenagers selected for the NHIS-YRBS was somewhat smaller than the number of youth ultimately identified as having been eligible for interview. Hence, the response rate for the NHIS-YRBS was somewhat lower than it might have been had all eligible youth been given the opportunity to respond. Another factor that may have contributed to the YRBS nonresponse rate was the requirement that interviews be done in person. Because of the portable audio headset method of data collection, telephone follow-up was not permitted for the NHIS-YRBS. Comparison of respondents and nonrespondents indicated that the two groups were not substantially different in terms of their sociodemographic profiles. Item nonresponse ranged from 0.15 to 7.86 percent for the questions discussed in this report.

## Sample design and statistical testing

The NHIS sample is selected so that a national probability sample of households is interviewed each week throughout the year. A detailed discussion of the sample design is available in *Current Estimates from the National Health Interview Survey, 1992* (15). Because the estimates shown in this report are based on a sample, they are subject to sampling error. The standard error is a measure of sampling error. The standard errors shown in tables 1 and 2 of this report were calculated using SUDAAN (SUrvey DAta ANalysis), developed by the Research Triangle Institute for analysis of complex sample surveys. The unadjusted percents were calculated using PROC CROSSTABS. The age-adjusted percents were calculated using PROC DESCRIPT. The entire NHIS-YRBS sample (age groups: 12–13 years, 14–17 years, and 18–21 years) was used as the standard population. For the data on sexual intercourse, age adjustment was limited to the two older groups because the question was asked only of youth 14 years and older. Data for tables 1 and 2 were tabulated using WOR (without replacement) design. All estimates in this report are based on data that have been weighted to represent the U.S. population of youth 12–21 years old. Table I shows the numbers of youth in the total U.S. population and in each of the four smoking status subgroups. This table can be used to estimate numbers of youth engaging in combinations of smoking and other health risk behaviors. Population estimates derived by using table I may be slightly different from those that would be obtained had the exact denominators for each individual variable been provided. However, the differences will be small and of no statistical consequence.

All differences cited in this report are statistically significant at the .05 level. The *t*-test, with a critical value of 1.96, was used to test all comparisons that are discussed. Lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found not to be statistically significant.

## Definition of terms

*Current smokers*—Youth who had smoked at least one cigarette in the past 30 days.

*Former smokers*—Youth who had at one time smoked at least one cigarette per day for 30 days, but had not smoked cigarettes in the past month.

*Experimenters*—Youth who had smoked at least one or two puffs of a cigarette, but had never smoked cigarettes every day for 30 days and had not used cigarettes in the last 30 days.

*Never smokers*—Youth who had never had even one or two puffs of a cigarette.

*Drank alcohol*—Consumed at least one alcoholic drink, including beer, wine, wine coolers, and liquor on at least one of the past 30 days.

*Episodic heavy drinking*—Consumed at least 5 drinks within a couple of hours in the past month.

*Smokeless tobacco*—Snuff such as Skoal, Skoal Bandits, or Copenhagen, or chewing tobacco such as Redman, Levi Garrett, or Beechnut.

*Marijuana*—Marijuana, grass, or pot.

*Cocaine*—Any form of cocaine, including powder, crack, or freebase.

*Carried a weapon*—Gun, knife, or club, carried at least once in the past 30 days.

*Physical fight*—Had been involved in at least one physical fight in the past year.

*Vigorous exercise*—Exercise that caused sweating and heavy breathing.

*Fewer than five servings of fruits and vegetables*—Adolescents were asked about their consumption of selected foods the day before the interview and could respond that they had consumed the food once, twice or more, or not at all. The foods were fruit juice, fruit, green salad, and cooked vegetables. The sum of the youth's fruit and vegetable intake was obtained by

**Table I. Number of youth by cigarette smoking status and age, United States, 1992**

| Smoking status | Ages 12–21 years | | | Ages 14–21 years[1] | | |
|---|---|---|---|---|---|---|
| | Total | Males | Females | Total | Males | Females |
| | Number in thousands | | | | | |
| All youth[2] | 33,518 | 16,816 | 16,702 | 23,412 | 12,152 | 11,260 |
| Current smokers | 9,132 | 4,818 | 4,314 | 7,336 | 4,042 | 3,295 |
| Former smokers | 1,033 | 468 | 565 | 739 | 372 | 367 |
| Experimenters | 9,835 | 4,759 | 5,076 | 7,478 | 3,734 | 3,744 |
| Never smokers | 13,518 | 6,771 | 6,747 | 7,859 | 4,005 | 3,854 |

[1]Never married and 14–21 years of age at time of NHIS initial household interview.
[2]Excludes youth for whom smoking status is unknown.

adding 1 for each time the youth said "once" and 2 for each time the youth said "2 or more." Thus, the prevalence of fruit and vegetable intake is a conservative estimate because youth who had more than 2 servings of a food were counted as having had only 2 servings.

### Availability of data and related data sources

The NHIS-YRBS is available on data tape from the Division of Health Interview Statistics. The NHIS-YRBS public use data tape includes data for all questions included in the youth risk behavior questionnaire as well as all other health and demographic information gathered during the initial household interview. For some youth ages 18–21 years, data from the NHIS-YRBS can be linked to other special topics that were part of the 1992 NHIS, including AIDS Knowledge and Attitudes, Cancer Control, Cancer Epidemiology, and Family Resources. The NHIS-YRBS is also available on CD-ROM from the U.S. Government Printing Office and from the National Technical Information Service. Contact the National Center for Health Statistics' Data Dissemination Branch for ordering information.

**Symbols**

| | |
|---|---|
| - - - | Data not available |
| . . . | Category not applicable |
| – | Quantity zero |
| * | Figure does not meet standard of reliability or precision (more than 30-percent relative standard error in numerator of percent or rate) |
| *– | Figure does not meet standard of reliability and quantity zero |

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